

Indiana Department of Environmental Management Office of Water Quality Assessment Branch

FACT SHEET B-022-OWQ-A-SU-06-0-R1 Rev. February 2006

IDEM's Surface Water Quality Assessment Program

Trace Metals Sampling Program

Program Objective

To comply with the new dissolved metals water quality criteria, data on trace amounts of metals in streams are required to accurately assess surface water quality. Historically, only total recoverable metals have been monitored. Therefore, there is a need in the Assessment Branch to implement Clean Sampling Techniques (Method 1669) in conjunction with ultra-clean, low detection levels for metals (EPA Method 1638, 1636, 1631, 1630, and others). The main objective of this project is to gather trace metals data for both dissolved and total recoverable metals at nanogram levels (parts per trillion, ppt) using clean sampling and ultra-clean analytical techniques. Additionally, the study has been used to investigate sampling methods that require less vigorous techniques in order to allow trace metals sampling to be conducted during routine sampling programs.

Program Participants

This program will be operated through the sampling efforts of the Surveys Section of the Assessment Branch, and through support of the selected Contract Analytical Laboratory.

Program Description

Media: Surface water (rivers and streams)
Study Area: Statewide targeted sampling locations

Sampling Sites: 24 locations

Sampling Frequency: Samples will be collected quarterly Data Collected: 18 metals, 13 non-metals, field data

Program Products

- Develop expertise in using Clean Sampling Methods.
- Collect both Total and Dissolved Metals data statewide at nanogram levels (parts per trillion, ppt).
- Identify dissolved and total mercury and methyl mercury concentrations.
- Sampling & Analysis Work Plans.
- QA/QC Review Reports.

Technical Notes

Select rivers and streams throughout Indiana were strategically chosen for participation in this program. Sampling sites were selected for close proximity to a USGS gaging station to facilitate detailed flow monitoring in conjunction with the metals sampling. Samples are taken quarterly in order to capture metals concentrations during the four seasons of the year. Both total and dissolved metals concentrations will be measured in surface water samples.

• Target Parameters

	M	eta	ls
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Miciais			
Aluminum	Cadmium	Manganese	Silver
Antimony	Chromium	Mercury	Thallium
Arsenic	Copper	Methyl Mercury	Zinc
Barium	Iron	Nickel	
Beryllium	Lead	Selenium	
Non-Metals			
Alkalinity	Hardness	Phosphorus, Total	Total Suspended Solids
Ammonia-Nitrogen	Kjeldahl Nitrogen, Total	Sulfate	_
Chemical Oxygen Demand	Nitrate+Nitrite-Nitrogen	Total Dissolved Solids	
Chloride	Organic Carbon, Total	Total Solids	
Field Sample Measurements			
Dissolved Oxygen pH	Turbidity	Water Temperature	Specific Conductance

• Sampling Procedures

Field work will follow EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels." According to this method, measures are taken to avoid exposing a sample to any possible source of metal contamination, including atmospheric deposition, by using non-metallic materials for sample collection and by following a rigorous sampling protocol. The method requires a "clean hands and dirty hands" technique, necessitating at least two or more staff for sampling. Data received from the Contract Lab will be reviewed by IDEM staff for Quality Assurance/Quality Control.

• Sampling Locations

Trace Metals Sampling Locations



Contact Information

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Report Environmental Emergencies:

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Confidential Technical Assistance:

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Pollution Complaint:

www.IN.gov/idem/pollutioncomplaints/

Ouestions and Comments:

www.IN.gov/idem/contact/questions.html

For More Information on IDEM's Office of Water Quality...

Assessment Branch (Surface water quality monitoring: rivers and streams, lakes, water quality standards) Shadeland Office, Indianapolis (317) 308-3173

Compliance Branch (Compliance and inspections, data and information services, wastewater certification and continuing education) Indiana Government Center North, Indianapolis (317) 233-2545

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Permitting Branch (Facilities Construction & Engineering Support, Industrial & municipal permits, modeling, and wet weather) Indiana Government Center North, Indianapolis (317) 232-8760

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